Remarks

I. Status of the Claims

In the Office Action, the Examiner indicated that claims 1-18 are pending, and rejected claims are 1-18. Therefore, claims 1-18 are pending for reconsideration.

II. Remarks

In paragraph 1 of the Office Action, the Examiner states "It is noted that a copy of the 3M article of White Zeosphere (sic) Microspheres was not provided so it has not been considered. Additionally a copy of the article could not be found in the parent application." Applicant respectfully submits that Applicant did provide a copy of the 3M article with the parent application 09/248,285. Applicant, in Appendix A, herein attaches a copy of the article, a copy of the IDS submitted with the parent application showing the item included as article "AI", and a copy of the postcard receipt, showing that article "AI" was received.

In paragraph 3 of the Office Action, the Examiner rejects claims 1-16 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the Office Action, the Examiner suggested an amendment to overcome the rejection, and Applicant has incorporated the Examiner's suggestion into Claim 1.

In paragraph 5 of the Office Action, the Examiner rejects claims 1-11, 15-16, and 18 under 35 U.S.C. 103(a) as being unpatentable over Hogerton et al (U.S. patent 5,714,252) in view of Kunitomoto et al (U.S. Patent 5,622,590) taken with Plamthottam et al (U.S. Patent 5,244,962). Hogerton is directed to a method of bonding using photocuring by ultraviolet light. Kunimoto introduces ceramic filler, such as aluminum nitride or silicon carbonate. Plamthottam introduces ceramic microspheres ("The core" (of an adhesive tape) " is capable of conforming to irregularities of the substrate and is normally filled with materials such as fumed silica, carbon black, microspheres or microballoons whether solid or hollow including but not limited to glass microballoons, phenolic microballoons, and ceramic microballoons." The Examiner, in

paragraph 6, further cites Kolesar, Jr (U.S. Patent 5,008,213) to point out that "...lithium aluminum silicate, an alkali alumino silicate, as the filler material for the epoxy resin, in the method of Hogerton et al, as modified above, as suggested in Kolesar, Jr." In none of the references cited has the crux of the present invention been rendered obvious, that is, as stated in Applicant's specification in many places that, using Applicant's invention, "The cure speed of the UV curable adhesives is essentially unaffected even at high microsphere loadings." (Page 2, lines 22-24). The invention also discusses essentially unreduced photospeed on Page 4, line 1. Zeeospheres®, on page 7, lines 8-30, are identified as "An especially preferred ceramic microsphere product which can be used in accordance with the present invention..". On page 11, lines 31-33, "The faster photospeed of the microsphere-filled UV curable adhesive composition according to the invention as compared to the silica-filled UV curable adhesive system can translate into a 16% reduction in optical sub-assembly fabrication time.

Kolesar, Jr.'s use of lithium aluminum silicate will significantly reduce photospeed. Most lithium aluminum silicate combinations fluoresce under ultraviolet light, meaning that lithium aluminum silicate absorbs a significant amount of the energy in ultraviolet light. Fluorescence demonstrates that energy is absorbed from the ultraviolet light, making the lithium aluminum silicate relatively not transparent to the ultraviolet light, and therefore, causing a reduction in photospeed. It will be noted that there are various forms of lithium aluminum silicate. Several URLs are cited below are noted, with brief notes from the URLs regarding fluorescence of particular compositions of lithium aluminum silicates under ultraviolet light.

- http://www.reade.com/Products/Minerals_and_Ores/petalite.html, which Discusses Li_2 Al_2O_3 $8SiO_2$ which identifies this type of lithium aluminum silicate (Petalite) to be fluorescent.
- http://www.geocities.com/~stuarts1031/fluorescent8b.html discusses Kunzite, a form of Lithium Aluminum Silicate that fluoresces weak red under short wave ultraviolet, and orange under long wave ultraviolet.

- http://www.minerals.net/mineral/silicate/ino/pyroxene/spodumen/spodumen.htm discusses spodumene, another form of lithium aluminum silicate, reporting spodumene to be "often fluorescent".
- http://mineral.galleries.com/minerals/silicate/eucrypti/eucrypti.htm discusses $LiAlSiO_4$, (Eucryptite), and reports that "only some specimens fluoresce a pink color,..."

To clearly distinguish claim 1 over Hogerton, Kunitomoto, Plamthottam, (and Kolesar, Jr), Applicant has amended claim1 (and other independent claims 17 and 18) to include the limitation that the microspheres do not essentially change a cure speed of said ultraviolet photocurable adhesive. Hogerton, Kunimoto, Plamthottam, and Kolesar, Jr, do not teach or fairly suggest, individually or in combination, use of microspheres that do not essentially change a cure speed of an ultraviolet photocurable adhesive when the microspheres are mixed with the ultraviolet photocurable adhesive. Applicant therefore submits that claim 1 is allowable as amended.

Applicant submits that claims depending from claim 1 (i.e., claims 2-16) are allowable as depending directly or indirectly from a now allowable independent claim 1.

In paragraph 6 of the Office Action, the Examiner rejects claims 12-14 under 35 U.S.C. 103(a) as being unpatentable over Hogerton in view of Kunitomoto, Plamthottam, and in further view of Kolesar, Jr. Claims 12-14 depend directly or indirectly from claim 1, which Applicant submits is allowable, as amended, as discussed above. Applicant therefore submits that, as depending from claim 1, claims 12-14 are now allowable.

On page 5 of the Office Action, the Examiner rejects independent claim 18 over Hogerton, Kunimoto, and Plamthottam. In response, Applicant has amended claim 18 to include the limitation, similar to that amended into claim 1, that is, the microspheres do not essentially change a cure speed of the ultraviolet photocurable adhesive. By the same argument used with

claim 1, Applicant submits that claim 18 is allowable as amended, over Hogerton, Kunimoto, and Plamthottam (and Koleshar, Jr). The references do not teach or fairly suggest, use of microspheres that do not essentially change a cure speed of the ultraviolet photocurable adhesive when the microspheres are mixed with the adhesive.

In paragraph 7 of the Office Action, the Examiner rejects claim 17 under 35 U.S.C 103(a) as being unpatentable over Hogerton, Kunitomoto, Plamthottam, and also in view of Belke, Jr. et al (U.S. Patent 5,783,867). Claim 17 is directed to a method of adhesive bonding including a step of extruding the photocurable adhesive composition onto at least one of said adherend and said substrate. The Examiner refers to Belke for teaching a method for extruding an adhesive. In response, as in independent claims 1 and 18, Applicant amends claim 17 to include a limitation that the microspheres do not essentially change a cure speed of said ultraviolet photocurable adhesive. Applicant submits that claim 17, as amended, is allowable over Hogerton, Kunitomoto, Plamthottam, and Belke (and Kolesar, Jr). The references do not teach or fairly suggest, use of microspheres that do not essentially change a cure speed of the ultraviolet photocurable adhesive when the microspheres are mixed with the adhesive.

Applicant has added new claims 19 and 20. Claim 19 depends from claim 14 and specifically states that said alkali alumino-silicate does not contain lithium. Claim 20 depends from claim 19 and specifically describes the chemical components of Zeeospheres® as given in attachment B.

In view of the foregoing comments and amendments, the Applicant respectfully submit that pending claims 1-20 are in condition for allowance and that the application should be passed to issue.

Respectfully submitted,

By: Robert R. Williams

Robert R. Williams, Patent Agent
Registration No.: 48,395

Telephone: (507) 253-2761
Fax No.: (507) 253-2382

Appendix A:

Contents:

1. Copy of IDS form PTO-1449 filed with parent case serial 09/248,285 2/11/99 showing the inclusion of the "3M™ and Zeelan Industries Announce New White Zeeospheres Microspheres," cited as item AI.
2. Copy of Postcard receipt of parent application, including IDS item AI.
3. Copy of the item referenced in IDS item AI.

Appendix B:

Contents:

Copy of "Silica Microsphere (Cenosphere/Zeeosphere)", Sino surplus, showing "Typical Chemical Components of Zeeospheres.

Chemical analysis of 3M Zeeospheres®.

Appendix B - second item

Chemical Composition of 3M Zeeospheres®

Elemental Composition of Zeeospheres*

Element	Atomic %
O	63.6
Si	19.6
Al	8.0
Na	8.6
K	0.2

* Determined via a Physical Electronics 5000 LS XPS at 14 KV with an Aluminum monochromator (350 W) at 45o and a pass energy of 93.90 eV

Assuming that Al, Si, and both alkali metals are present as the oxides, the composition is approximately:

70.0% SiO2
14.3% Al2O3
15.3% Na2O
0.4% K2O

Note the absence of Li.